

CLAIMS

1 - A method for starting a fuel-cell stack, comprising a plurality of cells supplied by a reformer (10), in which method, when the reformer is cold, a first subassembly (12) of cells of the fuel-cell stack is supplied with reformates and then, when the reformer is hot, the first and second subassemblies of cells of the fuel-cell stack are supplied, the cells of the first subassembly being optimized for operation with a cold reformer and the cells of the second subassembly (13) being optimized for operation with a hot reformer.

2 - A method according to claim 1, in which the cells of the second subassembly are supplied when the said cells are at an appropriate operating temperature.

3 - A method according to claim 1 or 2, in which a cooling circuit (21) common to the first and second subassemblies of cells of the fuel-cell stack is activated when the temperature of the first subassembly of cells reaches a temperature threshold.

4 - A fuel-cell stack system, comprising a fuel-cell stack (8) provided with a plurality of cells and a reformer (10) capable of supplying hydrogen from a hydrocarbon fuel, characterized in that it comprises a first subassembly (12) of cells optimized to operate with a cold reformer and a second subassembly (13) of cells optimized to operate with a hot reformer, and means for supplying the second subassembly of cells as a function of the reformer temperature.

5 - A system according to claim 4, characterized in that it comprises means of supplying the second subassembly of cells as a function of the temperature of the said second subassembly.

6 - A system according to claim 4 or 5, characterized in that it comprises a cooling circuit (21) common to the first and second subassemblies of cells, in such a way that the heat released by the first subassembly (12) of cells heats the second subassembly (13) of cells when the latter is shut down.

7 - A system according to any one of claims 4 to 6, characterized in that it comprises a pilot-controlled valve (17) mounted on a reformate-supply conduit of the second subassembly of cells, a pilot-controlled valve (19) mounted on an air-supply conduit of the second subassembly of cells, and an electronic switch (20) mounted on an output conductor of the second subassembly of cells.

8 - A system according to any one of claims 4 to 7, characterized in that it comprises a central unit (22) provided with means to run a software routine, with a memory and with at least one software routine stored in the memory, the software routine comprising a module to activate a cooling circuit (21) when the temperature of the first subassembly of cells reaches a temperature threshold.

9 - A vehicle comprising a power train with electric motor and a fuel-cell stack system according to any one of claims 4 to 8.